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AUTHOR Skaer, Peter M.
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ABSTRACT

A language typology based on common errors made in pronunciation of English by speakers of other languages is presented and discussed. The classification system was developed from the concept of interlanguage, the intermediate step between a language learner's native and target languages, and the notion that interference in learning a new language can occur in the transition from one phonological system to another. It focuses on representative languages spoken by refugees and immigrants in Washington State, including Japanese, Vietnamese, Khmer, Amharic, Polish, and to a lesser extent, Mandarin, Korean, Spanish, Thai, Margi, and Igbo. General parameters are offered by which the teacher may assess students' pronunciation needs so as to provide more effective instruction. Some universal characteristics of second language learning and how they may be reconciled with language-specific characteristics are also discussed. Then, general characteristics of tone and stress languages are outlined and each of several foreign language sound systems are discussed specifically. Finally, brief generalizations are offered for use in the classroom. A list of references is included. (MSE)

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LANGUAGE SOUND SYSTEMS AND SECOND LANGUAGE ACQUISITION

Peter M. Skaer

It is clear that to some extent second language learners exhibit a variety of forms of native language interference in the acquisiton of English. The output forms produced by second language learners has recently been termed "interlanguage"--representative of an intermediary stage between the students' native language and the target language (Tarone, 1978). Interlanguage is governed by many variables, including both first- and second-language rules and tendencies and language-universal rules and tendencies. Virtually all aspects of a language system potentially can be affected, including grammatical structures, semantic relationships and phonological systems, to name just a few. In this paper I am concerned with a comparison of the sound systems of several languages, and the kinds of problems that native speakers of foreign languages have in learning to speak English clearly and effectively. Focussing on those errors which have rather direct links to L1, I attempt to offer some general parameters by which you can assess your students' "pronunciation" needs so that you may provide more effective instruction. I also discuss some universal characteristics of second language acquisition and how they may be reconciled with language-specific characteristics. I begin by discussing the general characteristics of both tone and stress languages. and then proceed into a discussion on each of several different foreign language sound systems. I conclude by offering brief generalizations which can be transferred to the classroom.

My focus in this language typology is on representative languages spoken by refugees and immigrants in Washington state. I thus discuss

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many languages, including Japanese. Vietnamese, Khmer, Amharic, Polish, and to lesser extents, Mandarin, Korean, Spanish, Thai, Margi and Igbo. Ultimately, through this typology, I hope to provide you with enough basic insights by which to classify and interpret the native language(s) of your students. Even for the non-linguist the typology will provide insights into the kinds of problems the students' native language causes in the acquistion of a TL, as well as providing insights into just how far one can make generalization based soley on a L1/TL comparison. We will get an idea of how useful interlanguage data is, and what its general limitations are.

Keeping in mind the pronunciation focus of the discussion, what specifically am I referring to by the "sound system" of a language? I am referring to the inventory of sounds (the particular set of phonemes and allophones in a given language), the sequential ordering of individual sounds with respect to one another (for example, in English the consonant cluster #spr- (as in spring) is permissible, but not #tsr-), the grouping of sounds and sound clusters into language-specific timing units (syllables), the sequencing and arrangement of these units into a phrase or breath group (with rate/rhythm characteristics appearing via weak/strong syllable relationships), and the enclosing of phrases into global intonation patterns--patterns which package strings of phrases into statements, questions, focus arguments, etc. So, by the term "sound system" of a language, I am referring to sound-, syllable-, phrase- and utterance-patterns and the language specific rules which arrange these units into a complete system. In the present work, most of our attention will be directed towards the the structure and errors of the syllable. The final conclusions will be necessarily more

suggestive than conclusive, with the author's intention to supplement and enhance the present perspectives of current pronunciation teachers.

Some researchers have claimed that in second language acquistion, there is more first language interference affecting the sound system component than affects the other language components such as grammar (Kranke and Christinson, 1983). Whether there is more, or it is simply more noticeable, is not important--the point still remains that native language phonology does clearly affect TL acquisition. Interference is usually detected through production errors in speech, thus the current attention given to interlanguage(IL) data. We will now turn to an examination of several languages, extracting universal statements where possible, while noting the various kinds of errors observed and predicted.

What is the difference between stress and tone languages? In the simplest terms, stress languages contain words where one syllable stands out from the rest--where the stressed syllable has prominence in relation to other syllables in a speech sample. In English, for example, stress is used to contrast the nouns súspect and rébel with their verbal counterparts suspéct and rebél, or to emphasize content words amongst function words, such as the stóre and to wórk. Alternatively, tone languages contain content words which have a tone melody assigned to them individually and the melodies alone can be used to contrast one word from another. The Chinese tone language Mandarin offers an often cited example: mā (mother), má (numb), mǎ (horse) and mà (scold). Looking at English and Chinese superficially, then, the sound systems are clearly quite different.

Another area of difference is in syllable structures, where as a stress language, English contains complex permissible syllable structures, such as VCCC (asked), CCCVCC (stripes) and CCVCC (twelve), etc. The Asian tone languages primarily allow only much simpler syllable structures, generally with CV the most basic form (as in Mandarin ma, Vietnamese na , Thai ka and so forth.

Comparing the grammar of English to the Asian tone languages, other clear distinctions arise, some of which are relevant to pronunciation. English empioys a vast array of derivational and inflectional affixes with inflections such as past tense indicated by suffixes attached to verbs (walk/walked, ban/banned). In the Asian tone languages, on the other hand, markers for tense, plural, etc. are not suffixes attached to verbs and nouns, but are separate words (morphemes) that are placed into various positions in a sentence.

From this brief and superficial comparison, it might seen that there are several useful generalizations to be gleaned from the tone versus stress language dichotomy. Namely, it appears that stress language and tone language sound systems exist in a kind of symbiotic relationship, with stress languages containing complex syllable structures, multi-syllabic words, stress timing (for rate/rhythm) and heavy affixation, where the Asian tone languages, on the other hand, have relatively simple syllable structures, monosyllabic words, fairly complex tone pattern distinctions and non-affixing morphology. Though these distinctions do generally hold for the languages so far referred to, it is immediatley apparent that there are many languages which fall out of the neat tone versus

stress sub-classifications of language sound systems. A more detailed analysis will suggest that languages fall virtually anywhere along a continuum of from very stress-like to very tone-like (see McCawley, 1978), but it it is my claim that clear stress/tone differences do exist, and recognition of them will provide fruitful insights in the acquistion of a TL sound system.

We will now consider the sound systems of several languages, beginning with a more detailed review of the target language of English.

English is a stress language, where all nouns, verbs, adjectives and adverbs (content words) are assigned primary stress on one syllable. The function words such as prepositions, determiners, etc., generally are not stressed, and thus, generally are not as prominent as the content words. Many prefixes and suffixes are employed in English. Suffixes are used extensively to change tense, indicate plurality, possession, etc. (tense often in conjunction with various auxiliary verbs). Words have one, two or more syllables using over 40 different initial consonant clusters, and over 180 final clusters. The basic syllable structure is complex: (C)(C)CV(C)(C).

Kmer, the language of Cambodia (or "Kampuchea"), is another stress language, though it is spoken in Southeast Asia where tone languages otherwise predominate. Since like English Kmer is a stress language, there are many similarities between the sound systems of English and Kmer that do not exist between English and the other Southeast Asian languages. Prefixes, infixes and suffixes are used extensively in Kmer. The syllable can be complex, allowing (C)CV(C)(C), and can involve any of over 80

consonant clusters. A difference does exist between English and Kmer in the way that stress is assigned. In English, though there are some discernable patterns in stress assignment, for the most part, assignment is random (in the lexicon). In Kmer, however, stress is regularly assigned to the last syllable of all content words. Your Kmer students will need work on proper stress assignment, and will benefit from drills using multisyllabic nonsense words where they must place stress on each of the different syllables (as in: wánaka, wanáka, wanaká)--see Woods, 1979). Kmer is very different in what phonemes and allophones it employs in comparison to English--work will be required on the stops (consonants) in particular. In general, though, native speakers of Kmer will have less difficulty learning English than speakers of the other Southeast Asian languages. (Kmer content words are often multisyllabic.)

Other Asian stress languages include Japanese and Korean. I will describe Japanese only, but for the most part the discussion is directly applicable to Korean as well. Japanese is exceptional in that some linguists claim that they seem to employ features of both stress and tone languages (McCawley, 1978, Haraguchi, 1977). This is not as complex as it first must sound. Japanese, like English, assigns stress uniquely to each of most all content words (though there are some interesting exceptions), and leaves the smaller function words unassigned for stress. In Japanese, however, each phrase is assigned a tone pattern (HL) which is spread over all of the words in a predictable way (Skaer, 1983). Japanese syllables (or moras) are simple like the Asian tone languages, allowing only (C)V(C), with CV the common form.

Unlike the tone languages, however, Japanese words are usually multi-syllabic, where Mandarin, Vietnamese, etc., are usually monosyllabic. Japanese (like English and Kmer) also uses affixes extensively, with complex inflectional suffixes for verbs and adverbs. There are, however, few consonant clusters. Unlike many of the stress languages I discuss here, the word order of Japanese is subject-object-verb, not subject-verb-object as is English--a fact that actually has little consequence in the area of pronunciation. Japanese students will not have a great deal of difficulty with the change in word order, but will have problems with saying consonant clusters and several phonemes (such as the th sounds and the r/l sounds, to name the most common errors). Japanese do not have difficulty with inflections in English, other than pronouncing them correctly (they do not omit them as do most of the tone language speakers). A common tendency of Japanese speakers learning English is to epenthesize vowels (not necessarily schwas) into consonant strings. Thus, milk shake becomes [mirukusheki] and hamburger becomes [hamubagaa]. It is clear just from these two examples that other operations are involved with the interlanguage output forms: l is changed to r (more of a flapped liquid than we have in English) in milk shake, and the r of hamburger is deleted, to name just two examples. Keeping in mind the simple form of the basic syllable in Japanese, CV, it is easy to see that the interlanguage forms correspond more to the Japanese syllabic structure than the English TL structure. Further, the Japanese r is never found syllable-final (thus, native language motivation for dropping the English r in syllable- and word-final position). I must recognize a competing theory for why Japanese speakers restructure English consonant sequences. Tarone, 1978, Patrie, 1984, have both suggested that there is a universal language acquisition tendency to reduce complex forms

to simple sequences of CV--regardless of the structure of the students' native language (and even for children learning 'complex' first languages). If this were true, we would expect speakers of all languages to employ this universal tendency to some extent in the acquisition of English. I have as yet seen no data that actually supports this intuitive claim, and I think the data from Amharic argues against it (below). Nevertheless, we must consider the possibilities that it could be a universal CV theory, or a fact guided by the native language sound system or even a combination of these and perhaps other variable characteristics. Research into CV-governed phonology is in its infant stage, but the work of Clements and Keyser, 1983, clearly has set forth new parameters with which interlanguage data must be reinterpreted.

Amharic is termed a stress language, but like French, really exemplifies evenly distributed stress spread across all syllables. Some may argue there that the lack of prominence of one syllable over another in fact indicates an absence of stress. Since content words are in fact more prominent than their function word counterparts, Amharic is said to be a stress language (with even distribution). This is the same situation for French, thus, both languages are termed stress languages, but are syllable-timed. Each syllable takes an equal amount of time in a given speech sequence in a syllable-timed language, whereas for English, also a stress language, timing counts stressed syllables only (where there may be many content words or few between peaks, and the peaks will still occur at the same intervals).

1. The cát is interésted in protécting her kittens.
2. Lárge cárs wáste gás.

/----------2.4 Sec.----------/

(Woods, 1979, pp. 5)

Woods, 1979, notes that there is approximately .6 seconds between each syllabic peak in English. For syllables in French and Amharic, however, there are often no peaks, and each syllable is said with nearly equal weight and emphasis--thus they are called syllable-timed languages.

Returning to Amharic, consonant clustering is permissible to some extent, allowing for a relatively complex syllable. Grammatically, like Japanese, the word order is SOV with flexible rules of juxtaposition and also uses an extensive range of affixes. There is resistance by native speakers of Amharic to saying clusters containing more than two consonants in a row. The Ethiopian speaker of Amharic will impose some of his native language rules on English words or phrases which contain three or more consonants in a row: ten trucks becomes [tɛnətrʌks] or [tɛntərʌks], large trees becomes [larʃətəri z], etc. Notice that both [tɛntərʌks] and [larʃətəri z] do not represent the universal reduction to CV tendency, but rather seems to have imposed a native language constraint on sequences of two or more consonants. A Japanese attempting these same words would produce [tɛnutorakuzu] and and [laʃitori zu] (forgetting the r/l problem here). It is clear that the interlanguage data here for both Amharic and Japanese conform more to the parameters of their native language systems than to a universal condition. The epenthesis examples here are found in most interlanguage data from speakers all over the world. Generally, the schwa is most often the epenthesized element (and is also the most frequent sound which unstressed vowels reduce to in casual or fast speech). Certainly, then, there is both universal motivation for epenthesis (simplifying difficult or unfamiliar consonant clusters into more 'manageable' units) and language specific motivation to determine just how epenthesis will operate, and on what.

Polish is a stress language similar in many ways to Kmer. Words are usually multisyllabic, inflection is extensive and complex, with affixes for plural, gender, etc., added to root words (usually additions are suffixes). As in Kmer, rather than marking each individual word for stress, stress is assigned predictably for all content words: stress the penultimate syllable for most multisyllabic words. Syllables are complex, with consonant clusters allowed at beginnings and ends of syllables. Usually Polish speakers have a difficult time mastering the English vowel system but do not have as many difficulties mastering the English sound system as the Amharic speaker. (though many Amharic speakers have already studied English in Ethiopia and thus have some advantages there).

I next mention the characteristics of Spanish. Spanish too is a stress language, with most content words marked for stress on the last syllable for words which end in consonants or on the antepenultimate syllable for words ending in vowels (with of course exceptions to each of these rules). Though there is some allowable consonant clustering (#CC), many English clusters are broken up in much the same way as an Amharic or Japanese speaker would. Thus, a cluster like [#st-] in student becomes [#est-]. Also, final stops in English are often pronounced with a final vowel added, as in [-t#] goes to [-te#].

I have so far discussed English, Kmer, Japanese/Korean, Amharic, Polish and Spanish. Though these languages are all classified as stress languages, the ways in which stress is assigned in each of these languages is often unique. English 'randomly' assigns stress to most individual content words in the lexicon, as does Japanese and Korean. Amharic spreads stress evenly over all the content words, thus causing stress to merely indicate content

word prominence over function words (as does French). Finally, speakers of languages from such diverse geographical locations as Poland, Cambodia and Mexico (speaking Polish, Kmer and Spanish, respectively), use sound systems that assign stress to all content words in an ordered predictable fashion. It is clear that there is quite a range of sound systems even amongst the sub-category of stress languages.

Turning now to a brief review of tone languages, it is clear that there are many similarities amongst the Asian tone languages. Individual content words are usually assigned one of from 4 to 8 tone patterns. The words are usually monosyllabic, usually have simple syllable structures (of the general form CV) and usually without extensive consonant-clustering. In grammatical terms, there is little affixation, but more extensive independent morpheme usage. I have repeatedly specified Asian tone languages intentionally--they do share many distinctive features in common and are thus a definite sub-category on their own. I must mention here, however, that there is another subset of tone languages: namely, the West African tone languages of the likes of Margi, Igbo and Kikuyu. Since speakers of these languages are in general not represented in the refugee or immigrant languages found in Washington state, I will only briefly detail them for comparitive purposes later in my discussion.

Vietnamese is a tone language which employs 5 or 6 tones assigned to individual content words. Most native content words are monosyllabic, with most syllables of the canon form CV. Rather than affixes, extensive use of independent morphemes is evident to indicate tense, plurality, etc. (though tense is often not indicated in Vietnamese). Few consonants are found

in coda position, and no suffixes are employed, so you will find that many of your Vietnamese students of English will often leave off English suffixes and coda consonants. Tone patterns do not seem to interfere much with acquiring a stress language, though stress placement work will be necessary (see the discussion on Kmer). Other Southeast Asian language sound systems pattern themselves in much the same way, and elicit most of the same problems noted here for Vietnamese.

Lao, for an example, assigns 6 different tone patterns to each content word. There is no affixation--tense, plurality, possession, etc., are indicated by separate words which precede the words they modify. The basic syllable canon is CV(C), with some consonant clusters in initial position, a few final consonants, and even fewer consonant clusters. As was true for Vietnamese as well, Lao function words have no inherent tone assigned--rather, through processes known as tone sandhi, tone spreads from adjacent content words to the adjoining function words.

Hmong, one of the Hilltribe languages of Laos, is similar to Lao and Vietnamese, but various dialects can employ up to 8 contrasting tone patterns in the marking of content words. The syllable structure is similar to Lao and Vietnamese, as is the basic grammatical configurations. Mien is similar to Hmong, but since we have had few speakers of either language at our facility, I have not been able to identify any particular group errors in the interlanguage data of either Hmong or Mien which separate them from other Asian tone languages.

Overall, for the characteristics of Southeast Asian tone languages, then, we find that most of the sound systems assign tone patterns to individual

content words, with no tones initially assigned to function words. The native words of these languages are generally monosyllabic, and the syllables are generally simple--most commonly of the form CV. Finally affixation is virtually non-existent (segments are thus not added to edges of words or syllables in Southeast Asian tone languages), but independent morpheme ordering is important. One of the major differences which distinguish one Southeast Asian tone language from another is in the area of sound inventories (phonemes and allophones) and allowable sound sequences--though even here similarities are to be expected, whatwith the historical and proximal ties of one language to another.

The African tone languages differ measurably from the Southeast Asian tone languages. In brief and general terms, African tone languages do not assign tone patterns to individual words, but rather to grammatical categories. A single tone melody may be used for all variations of past tense, or a nominalizing suffix, or to all nouns, and so forth. Most West African tone languages such as Margi and Igbo do have comparitively more complex syllables, more consonant clustering and employ extensive affixing rules. For pronunciation purposes, West African tone languages more closely represent stress languages in that the syllables are complex. A difference lies in the fact that tones are assigned according to grammatical categories, rather than to each content words individually.

Leaving the African tone languages apart from my analysis and trying to organize all of the facts assembled so far, it is clear that the simple form of my hypothesis, that tone and stress languages exist in a symbiotic

relationship, is not entirely borne out by the data of the several languages mentioned here, even discounting the African languages. What general principles can we in fact elicit from the foregoing discussion on the sound systems of stress languages such as English, Kmer, Amharic, Polish and Japanese, and the tone languages such as Vietnamese, Hmong and Lao? Certainly one general conclusion is that speakers of stress languages are more familiar with affixation than a native speaker of a Southeast Asian tone language speaker. Why is this relevant to pronunciation? One reason is that speakers of tone languages are not used to adding segments to syllables or words in their own language--a rule of tone languages that could interfere with, say, a Vietnamese learning to conjugate verbs or make singular/plural distinctions. Note that this <u>is</u> a feasible explanation <u>even</u> in light of the universal tendency to reduce complex segments to sequences of CV (were the latter to somehow be empirically substantiated).

Comparing syllabic structures of stress and tone languages, one is likely to find "heavier" syllables in stress languages, with more extensive consonant clustering, while in Southeast Asian tone languages the syllables are predictably simple, with little permissible consonant clustering.

How does all of this benefit the language teacher? What aspects of the English sound system can or should be taught? If your student is having pronuniciation problems, it is quite likely not simply a problem of inability to articulate certain sounds correctly in isolation. It is more likely a combination of several factors, including misue/misunderstanding/misperception of a given segment, inability to correctly place stress on syllables, problems of restructuring syllables such as epenthesis and deletion which

alter sequences of sounds but also changes the rate and rhythm of the target structure. In order to be an effective teacher, you must analyze your students' errors with English as the target, but also attempt to recognize how your students accomplished the same language function in their own language. As you develop expertise at assesssing your students, you will recognize group characteristics as well as individual exceptions and will be better equipped to develop corrective teaching strategies.

Going back to Vietnamese again, if a Vietnamese student had problems producing consonants in syllable-final position (which most of them do), like v in love-- a teacher might at first be puzzled--they can say v in syllable-initial position (as in van--albeit a slightly different (but intelligible) version of our English v)--so what is the big problem with saying v at ends of syllables or words? The present discussion should have provided some directions towards solving this and many other "group characteristic" pronunication problems. In the case at hand, Vietnamese speakers are not used to complex syllables, and further, are not used to syllables with final non-nasal (and non-imploded) consonants. A teacher would have reason to teach not just the v sound in final position, but all normally occurring English consonants in final position. Extending the case even further, as we have already noted, Southeast Asian tone languages traditionally do not employ suffixes to indicate tense, plurality, possession, etc., as English does. This fact is true of Vietnamese, Lao and Hmong and is significant in the interference of learning English pronunciation. There will be phonological and well as grammatical interference for Southeast Asians learning to conjugate English verbs, to name just one example. Thus, in learning to say walk/walked or love/loves distinctively, the Vietnamese

speaker would have problems with the final consonant of the root verbs (k and v) because of native language syllable structure interference (resists final consonants) and will have further problems with the tense indicators -ed and -s for the same reason and for a grammatical constraint as well--they are not conditioned in their native languages to add segments such as suffixes to root content words. What other variables could affect the student learning final consonants correctly? As mentioned earlier, universal tendencies such as simplifying all difficult sequences to CV could also be in operation--making the task of the teacher all that more difficult to accurately analyze and correct. However, it is clear that this tendency, if indeed relevant, is often not the most significant factor affecting interlanguage forms. An example can be observed in the interlanguage forms of Vietnamese speakers attempting to produce the word loves compared to a Japanese speaker's attempts:

3. (Vietnamese) [la]

4. (Japanese) [rabuzu] (not really an English b, but ɸ).

Clearly, even if the universal CV tendency was employed, it simply isn't enough to account for the two languages which share similar syllabic structures. Rather, native language forms are certainly important, if not most important, in ascertaining a plausible explanation for the different forms in (3) and (4). Japanese both allows suffixes and requires that there be no final consonants. The simple fact that both (3) and (4) contain CV sequences does not provide much productive insight into such discrepant interlanguage forms, and thus offers little support for the CV simplification theory to stand by itself--it is possibly one of many variables that combine with the students' native language to produce unique interlanguage output.

The true intent of the symbiotic hypothesis has been preserved to some useful extent: speakers of languages with complex syllables probably are able to use affixes and are probably speakers of stress languages. These speakers will learn English pronunciation somewhat more rapidly than native tone language speakers, since many general parameters are matched in English by other stress languages. Conversely, speakers of languages with simple syllables probably are not used to affixation and are probably speakers of an Asian tone language (with Japanese the exception: simple syllables and extensive affixation). Keeping in mind that there are exceptions to virtually every rule written to describe a linguistic operation, and recognizing that a few languages I have described here in fact violate the general symbiotic paradigm, I nevertheless feel that the general parameters I have described will help to provide useful insights into how and why the rules and processes of a student's native language sound system (or grammatical, or semantic) may interfere with his acquisition of English as a second or foreign language. To be most effective, the teacher should closely scrutinize both the similarities and differences existent between the students' native language and the target language to better understand the mechanics of the students' difficulties, and to better perceive and develop effective educational strategies.

This paper has been an attempt at helping the ESL teacher understand the basic parameters of both the universal characteristics of language phonology and the individual language differences of their students so that they may be better able to develop informed and effective pronunciation lessons, and so that they will be better suited to meet the individual and group needs of their students.

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